PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-025417

(43)Date of publication of application : 25.01.2000

(51)Int.Cl. B60C 11/11

(21)Application number : 10-197381

(22)Date of filing : 13.07.1998

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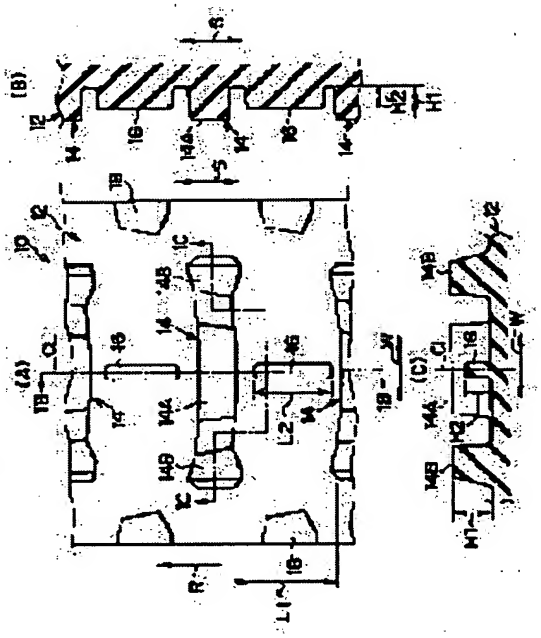
(54) TIRE FOR MOTORCYCLE

(57)Abstract:

PROBLEM TO BE SOLVED: To remarkably improve the skidding performance during cornering in a tire for use in motorcycles without impairing the traction performance on a muddy ground.

SOLUTION: In order to obtain the traction performance, many cross direction block-rows 14 are provided in the circumferential direction of the tire. Third blocks 16 the block height of which is lower than that of the cross direction block-rows 14 and which are long in the circumferential direction of the tire, are provided between the cross direction block-rows 14. Since the third blocks 16 resist the flow of mud across the tire-width between the cross direction block-rows 14, the skidding performance is improved to improve the cornering performance of the tire on the muddy ground. Further, since the height of the third blocks 16 is set to be lower than that of the cross direction block-rows, the flow of mud between the cross direction block-rows 14 is not completely blocked up. Thus, the mud-flowability is ensured to prevent the mud from being clogged between the cross direction block-rows 14.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of

rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

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CLAIMS

[Claim(s)]
[Claim 1] The tire for motorcycles characterized by arranging at least one low block of block height rather than said crosswise block train between the crosswise block trains and the crosswise block trains which are the tire for motorcycles which has the tread pattern with which two or more block trains were formed along the tire hoop direction, and are arranged crosswise [tire] by the nothing tire hoop direction in the train.
[Claim 2] The tire for motorcycles according to claim 1 to which the configuration of a low block of block height is characterized by being a configuration longer than the tire cross direction to a tire hoop direction rather than said crosswise block train.
[Claim 3] The tire for motorcycles according to claim 1 or 2 to which the low block height of a block of block height is characterized by being 40% - 80% of the block height of said crosswise block train rather than said crosswise block train.
[Claim 4] The tire for motorcycles given in any 1 term of claim 1 to which the low block of block height is characterized by being arranged at a time at at least one tire equatorial plane both sides between said crosswise block train and a crosswise block train rather than said crosswise block train thru/or claim 3.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the tire for motorcycles, especially relates to the suitable tire for motorcycles for use in irregular grounds, such as a mud ground.
[0002]
[Description of the Prior Art] The tire for motorcycles used with irregular backgrounds, such as a mud ground, has the tread pattern generally equipped with two or more blocks.
[0003] Especially the cornering nature (horizontal grip nature) in the irregular ground is a very important property with traction nature and brake nature among such various properties of the tire for motorcycles.
[0004] In the tire for a game used [especially] by a motocross race etc., since a cornering is performed at high speed, the quality of the longitudinal direction grip nature of a tire serves as an element very important for a tire.
[0005]
[Problem(s) to be Solved by the Invention] However, especially, in order to secure ** mud brush nature which becomes a pattern based on the crosswise block train which comes to prepare two or more two or more blocks crosswise [tire] in order to think ** traction as important in the conventional tire for motorcycles on condition of use in the mud ground, between the train of a crosswise block, and the train of a crosswise block, it was characterized by what a block is not arranged for.
[0006] Consequently, while being most used by the cornering of mud ground transit, there was no resistance to lateral force in a camber region, and improvement in the sideslip engine performance and coexistence of the traction engine performance were difficult.
[0007] That is, if spacing of a crosswise block train is extended and the rate of a negative is made to increase, in order for the resistance to a longitudinal direction input to decrease, and for the sideslip engine performance to worsen and to obtain lateral resistance, when the block which constitutes the crosswise block train between crosswise block trains, and the block of the same height had arranged, problems, like mud brush nature worsens generated, and it is very difficult in coexistence of the traction engine performance in the mud ground, and the cornering engine performance.
[0008] It is the purpose to offer the tire for motorcycles which can improve sharply the sideslip engine performance at the time of a cornering, without this invention spoiling the traction engine performance in the mud ground in consideration of the above-mentioned fact.
[0009]
[Means for Solving the Problem] Invention according to claim 1 is characterized by arranging at least one low block of block height rather than said crosswise block train between the crosswise block trains and the crosswise block trains which are the tire for motorcycles which has the tread pattern with which two or more block trains were formed along the tire hoop direction, and are arranged crosswise [tire] by the nothing tire hoop direction in the train.
[0010] With the tire for motorcycles according to claim 1, since the crosswise block train currently

arranged in the nothing tire hoop direction in the train is prepared in the direction which crosses to a tire hand of cut, i.e., the tire cross direction, in the mud ground, high traction nature and brake nature are obtained.
[0011] Moreover, since the block established between the crosswise block train and the crosswise block train serves as resistance of the flow of the mud of the tire cross direction between a crosswise block train and a crosswise block train, the sideslip engine performance improves and the cornering engine performance in the mud ground improves.
[0012] Furthermore, since the block established between the crosswise block train and the crosswise block train is set up lower than a crosswise block train, this block set up low does not intercept completely the flow of the mud between a crosswise block train and a crosswise block train, and mud brush nature is secured. Therefore, the blinding of the mud between a crosswise block train and a crosswise block train can be prevented.
[0013] That is, by increasing a crawler bearing area, the tire for motorcycles of this invention aims at optimization of the resistance to mud brush nature and lateral force rather than aims at improvement in the sideslip engine performance, and since it is raising the sideslip engine performance by stopping muddy flow, it is suitable for especially use in the mud ground.
[0014] Invention according to claim 2 is characterized by the configuration of a low block of block height being a configuration longer than the tire cross direction to a tire hoop direction rather than said crosswise block train in the tire for motorcycles according to claim 1.
[0015] An operation of the tire for motorcycles according to claim 2 is explained.
[0016] If the configuration of a low block of block height compares the case of a configuration long to the tire cross direction with the case of the configuration longer than the tire cross direction to a tire hoop direction rather than a tire hoop direction, since the block of a long configuration will serve as strong resistance from a crosswise block train to muddy flow in a tire hoop direction rather than the tire cross direction, the sideslip engine performance can be raised certainly.
[0017] Invention according to claim 3 is characterized by the low block height of a block of block height being 40% - 80% of block height of said crosswise block train rather than said crosswise block train in the tire for motorcycles according to claim 1 or 2.
[0018] With the tire for motorcycles according to claim 3, since the low block height of a block of block height was made into 40% - 80% of the block height of a crosswise block train rather than the crosswise block train, it is compatible in the sideslip engine performance and mud brush nature.
[0019] When the block height of a low block of block height turns into less than 40% of the block height of a crosswise block train from a crosswise block train, it becomes impossible to raise the sideslip engine performance, and when 80% is exceeded, mud brush nature falls and it becomes impossible to prevent muddy blinding.
[0020] Invention according to claim 4 is characterized by arranging the low block of block height on at least one tire equatorial plane both sides between [each] a crosswise block train and a crosswise block train rather than said crosswise block train in the tire for motorcycles given in any 1 term of claim 1 thru/or claim 3.
[0021] With the tire for motorcycles according to claim 4, since it has arranged the low block of block height at a time on at least one tire equatorial plane both sides rather than the crosswise block train, the sideslip engine performance can be improved further, and the rigidity of a tread can be raised, and the feeling of rigidity at the time of transit can also be raised.
[0022]
[Embodiment of the Invention] One operation gestalt of the tire for motorcycles of this invention is explained according to drawing 1 (A) - (C).
[0023] Drawing 1 (A) is the development view of the tread 12 of the tire 10 for motorcycles of this operation gestalt, drawing 1 (B) is a B1-B1 line sectional view of a tread 12 shown in drawing 1 (A), and drawing 1 (C) is a C1-C1 line sectional view of a tread 12 shown in drawing 1 (A).
[0024] Drawing 1 (A) As shown in - (C), along the tire hoop direction (the direction of arrow-head S), the crosswise block train 14 opens spacing in the tread 12 of the tire 10 for motorcycles of this operation

gestalt, and is formed in it in tire cross direction (direction of arrow-head W) pars intermedia.
[0025] The crosswise block train 14 consists of the 1st block 14A arranged on the tire equatorial plane CL, and the 2nd block 14B arranged in the tire cross direction both sides.
[0026] Moreover, the 3rd block 16 is arranged by the tread 12 on the tire equatorial plane CL between the crosswise block train 14 and the crosswise block train 14, and the 4th block 18 is arranged near the edge of a tread 12 by the tire cross direction both sides of the 3rd block 16.
[0027] The 3rd block 16 is a configuration long to the tire hoop direction where the dimension of a tire hoop direction was made into size rather than the dimension of the tire cross direction, and as for the crosswise block train 14, not being connected is desirable [the block] so that it may illustrate.
[0028] Moreover, when the block height of 1st block 14A of the crosswise block train 14 and 2nd block 14B is H1, as for the block height H2 of the 3rd block 16, it is desirable to set to 40% - 80% of the block height H1.
[0029] In addition, since the internal structure of the tire 10 for motorcycles of this operation gestalt is the same as the structure of a general bias tire, the explanation about a internal structure is omitted.
[0030] Next, an operation of the tire 10 for motorcycles of this operation gestalt is explained.
[0031] With the tire 10 for motorcycles of this operation gestalt, since many crosswise block trains 14 prolonged in the direction which crosses to a tire hand of cut (the direction of arrow-head R), i.e., the tire cross direction, are formed in the tire hoop direction, in the mud ground, high traction nature and brake nature are obtained.
[0032] Moreover, since the 3rd block 16 long to the tire hoop direction prepared between the crosswise block train 14 and the crosswise block train 14 serves as resistance of the flow of the mud of the tire cross direction between the crosswise block train 14 and the crosswise block train 14, the sideslip engine performance can be raised and, thereby, the cornering engine performance in the mud ground can be raised.
[0033] Furthermore, since the block height of the 3rd block 16 is low set up rather than the block height of the crosswise block train 14, the flow of the mud between the crosswise block train 14 and the crosswise block train 14 is not completely intercepted for the 3rd block 16, and mud brush nature is secured. Therefore, the blinding of the mud between the crosswise block train 14 and the crosswise block train 14 can be prevented.
[0034] When the block height H2 of the 3rd block 16 becomes less than 40% to the block height H1 of the crosswise block train 14, it becomes impossible to raise the sideslip engine performance, and when 80% is exceeded, mud brush nature falls and it becomes impossible here, to prevent muddy blinding.
[0035] In addition, although the 3rd one long block 16 has been arranged along a tire hoop direction with this operation gestalt on the tire equatorial plane CL between the crosswise block train 14 and the crosswise block train 14 to the tire hoop direction, this invention may be arranged not only in this, the 3rd block 16 may be arranged to parts other than the tire equatorial plane CL, and the sense may incline to a tire hoop direction. For example, as shown in drawing 2 , you may arrange in parallel with the both sides of the tire equatorial plane CL, as shown in drawing 3 , you may arrange so that a tire hand-of-cut (direction of arrow-head R) side may open to the both sides of the tire equatorial plane CL, and you may arrange so that the opposite side may open with a tire hand of cut (the direction of arrow-head R) on both sides of the tire equatorial plane CL, as shown in drawing 4 .
[0036] Moreover, as shown in drawing 5 , the 3rd block 16 may be divided into two in a tire hoop direction, and as shown in drawing 6 , you may trichotomize into a tire hoop direction.
[0037] Moreover, although illustration is not carried out, two or more 3rd block 16 may be arranged respectively at the both sides of the tire equatorial plane CL.
[0038] Here, as shown in drawing 1 , 3, and 6 grades, when L1 and the tire hoop direction die length of the 3rd block 16 are set to L2 (total of each die length as shown in drawing 6 , when being divided in addition into plurality) for spacing of the tire hoop direction of the crosswise block train 14 and the crosswise block train 14, it is desirable to set L2 to 40 - 75% of L1. If L2 becomes less than 40% of L1, the capacity to raise the sideslip engine performance will decline, and if L2 exceeds 75% of L1, mud brush nature will fall.

(Example of a trial) In order to confirm the effectiveness of the tire for motorcycles of this invention, one sort of tires for motorcycles of the conventional example and six sorts of tires of the example to which this invention was applied were prepared, the domestic motorcycle was equipped, mud ground transit by the pro rider was performed, and real vehicle evaluation was performed.

[0039] The tire used for the trial is a bias tire made into the two-layer structure of carcass ply where a carcass consists of a nylon code, and each size is MCR110 / 90-19. The rim of 2.15x19 was equipped with this tire, and internal pressure was set to 80kPA(s).

[0040] Real vehicle evaluation graded by ten-point full marks. In addition, it is shown that the engine performance is excellent, so that a numeric value is large.

[0041] The item of a trial tire is shown in following Table 1, and a test result is shown in Table 2.

[0042] In addition, the rate of a negative calculated by having considered it to be a part for a road surface and the slot which is not grounded is indicated by the column of the rate of a negative on the left-hand side of Table 1, and the rate of a negative calculated by having considered it to be the land part to ground with the road surface like the high block of height is indicated by the column of the right-hand side rate of a negative.

[0043]

[Table 1]

	ブロックの配置	ブロック高さ (mm)	ネガティブ率	ネガティブ率
従来例のタイヤ	幅方向ブロック列の間にブロック無し（図7参照）	H1 17.5	81%	81%
実施例1のタイヤ	タイヤ赤道面に1つのブロック（図1参照）	H1 17.5 H2 7	⇧	79%
実施例2のタイヤ	タイヤ赤道面両側にブロック（図2参照）	H1 17.5 H2 10	⇧	78%
実施例3のタイヤ	タイヤ赤道面に2つのブロック（図5参照）	H1 17.5 H2 10	⇧	79%
実施例4のタイヤ	タイヤ赤道面に3つのブロック（図6参照）	H1 17.5 H2 10	⇧	79%
実施例5のタイヤ	タイヤ赤道面両側に2つの傾斜ブロック（図3参照）	H1 17.5 H2 14	⇧	79%
実施例6のタイヤ	タイヤ赤道面両側に2つの傾斜ブロック（図4参照）	H1 17.5 H2 7	⇧	78%

[0044]

[Table 2]

	トラクション性能	横滑り性能	泥はけ性能	剛性感
従来例のタイヤ	5	5	5	5
実施例1のタイヤ	5	7	5	6
実施例2のタイヤ	5	8	5	7
実施例3のタイヤ	5	7	5	6
実施例4のタイヤ	5	7	5	6
実施例5のタイヤ	8	9	5	8
実施例6のタイヤ	7	7	5	7

A trial shows that the tire for motorcycles of the examples 1-6 to which this invention was applied is excellent in the sideslip engine performance as compared with the tire for motorcycles of the

conventional example, and the mud brush engine performance is also maintained as usual.
[0045] Moreover, as for the tire of examples 5 and 6, improvement in the traction engine performance was found. By the block which inclined to the tire hoop direction arranged between crosswise blocks, since the crosswise block component increased, this is considered.
[0046] Furthermore, since the tire of examples 1-6 had arranged the block between crosswise blocks, its feeling of rigidity also improved.
[0047] In addition, it is desirable to make into 75% or more the rate of a negative calculated by having considered it to be the land part grounded like the high block (the crosswise block train 14, 4th block 18) of height.
[0048]
[Effect of the Invention] It has the outstanding effectiveness that the sideslip engine performance at the time of a cornering can be improved sharply, without spoiling the traction engine performance in the mud ground, since the tire for motorcycles according to claim 1 was considered as the above-mentioned configuration as explained above.
[0049] Since the tire for motorcycles according to claim 2 was considered as the above-mentioned configuration, it has the outstanding effectiveness that the sideslip engine performance can be improved certainly.
[0050] Since the tire for motorcycles according to claim 3 was considered as the above-mentioned configuration, it has the outstanding effectiveness that it is compatible in the sideslip engine performance and mud brush nature.
[0051] Since the tire for motorcycles according to claim 4 was considered as the above-mentioned configuration, it has the outstanding effectiveness that the sideslip engine performance can be improved further, and the rigidity of a tread can be raised, and the feeling of rigidity at the time of transit can be raised.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] (A) is the development view of the tread of the tire for motorcycles concerning 1 operation gestalt of this invention, (B) is a 1B-1B line sectional view of a tread shown in drawing 1 (A), and (C) is a 1C-1C line sectional view of a tread shown in drawing 1 (A).
[Drawing 2] It is the development view of the tread of the tire for motorcycles concerning other operation gestalten.
[Drawing 3] Furthermore, it is the development view of the tread of the tire for motorcycles concerning other operation gestalten.
[Drawing 4] Furthermore, it is the development view of the tread of the tire for motorcycles concerning other operation gestalten.
[Drawing 5] Furthermore, it is the development view of the tread of the tire for motorcycles concerning other operation gestalten.
[Drawing 6] Furthermore, it is the development view of the tread of the tire for motorcycles concerning other operation gestalten.
[Drawing 7] It is the development view of the tread of the tire for motorcycles concerning the conventional example.
[Description of Notations]
10 Tire for Motorcycles
14 Crosswise Block Train
16 3rd Block

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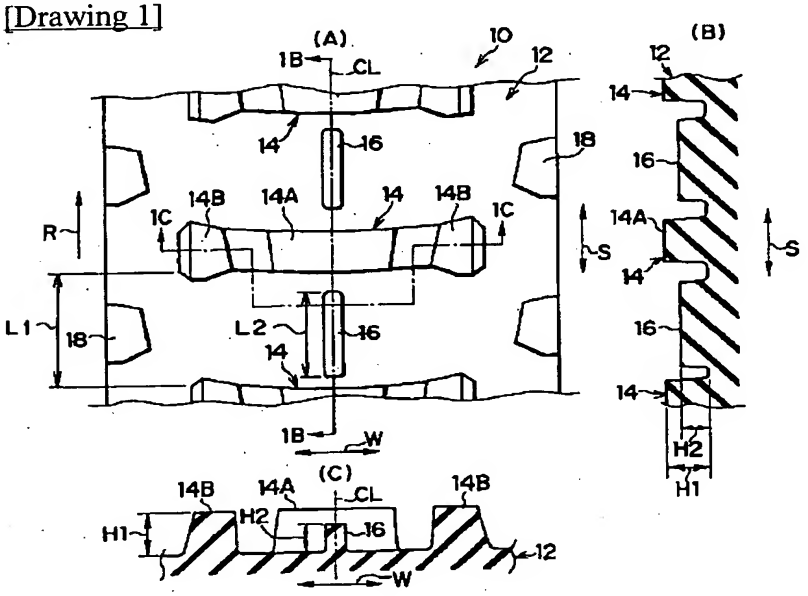
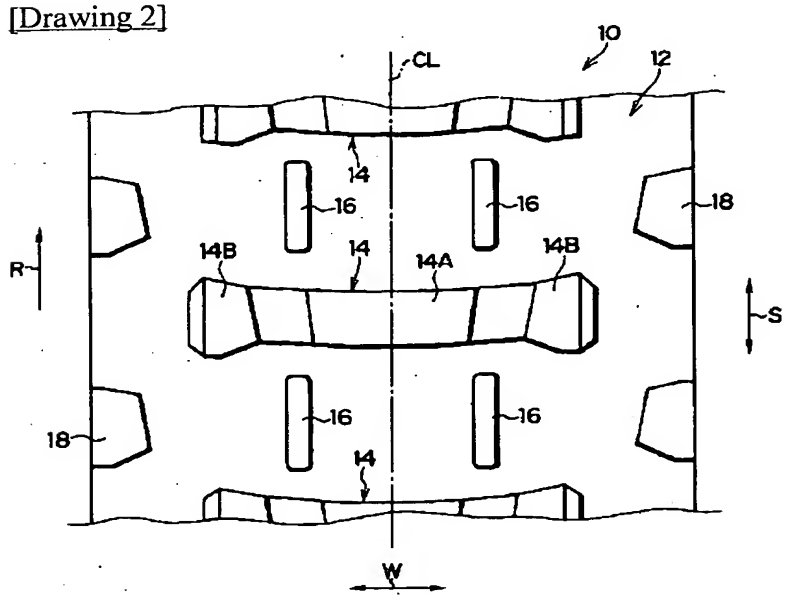
DRAWINGS

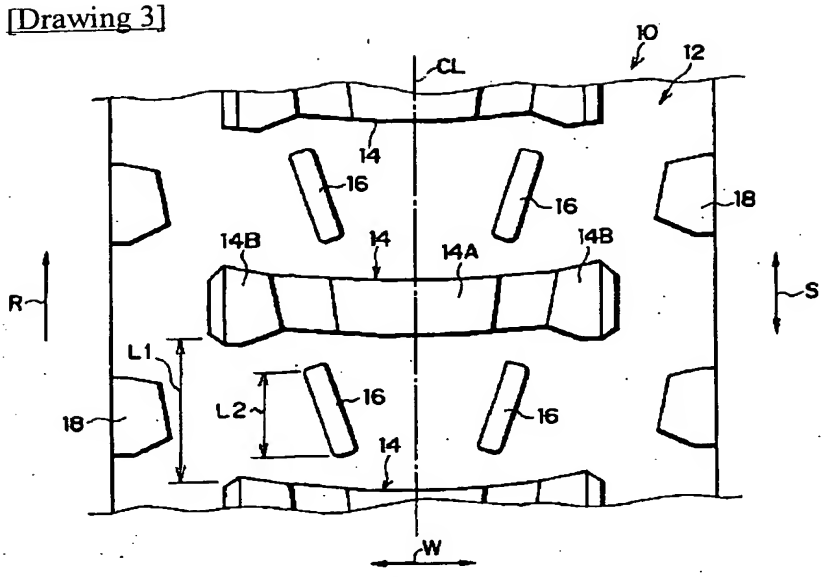
[Drawing 1]



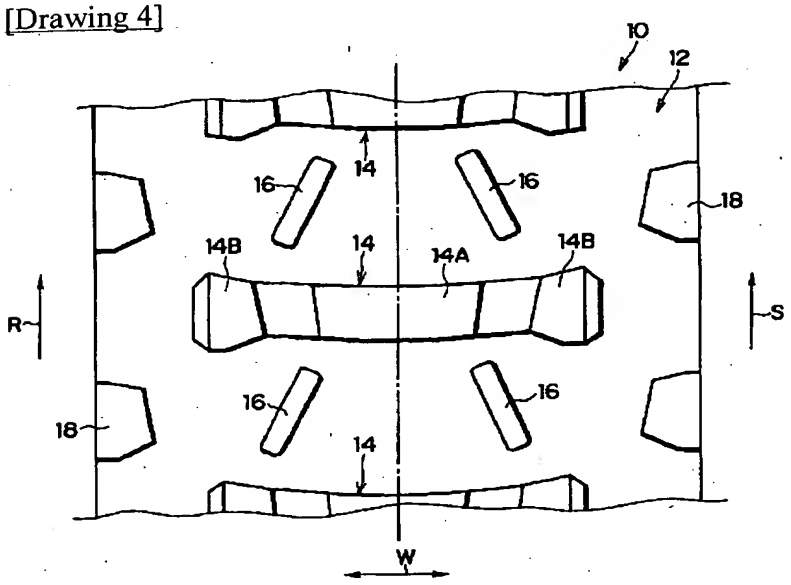
[Drawing 2]



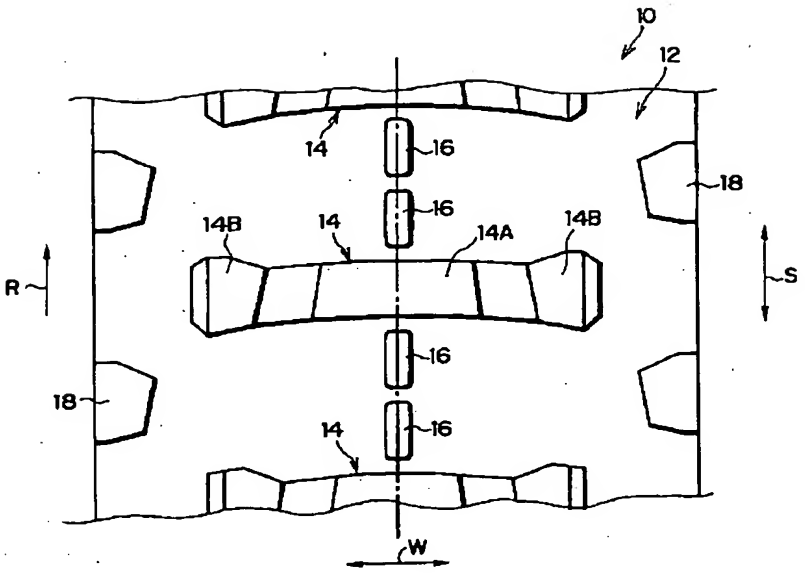
[Drawing 3]



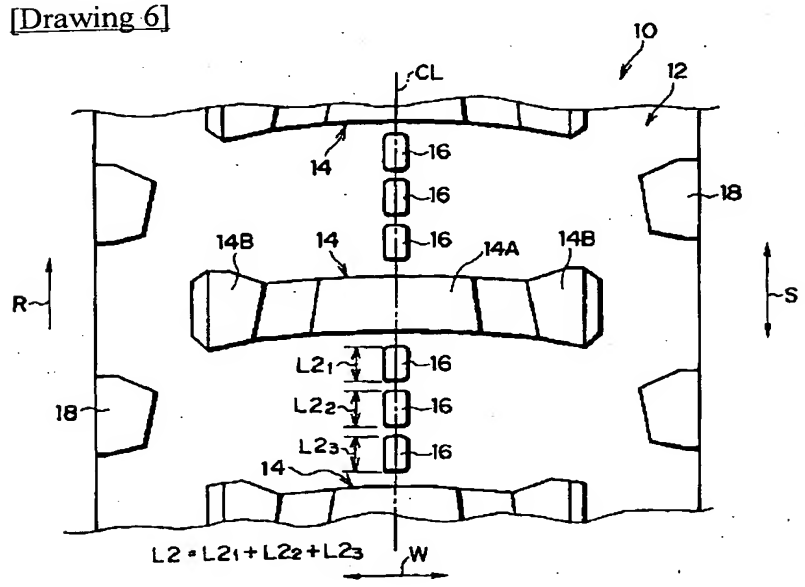
[Drawing 4]



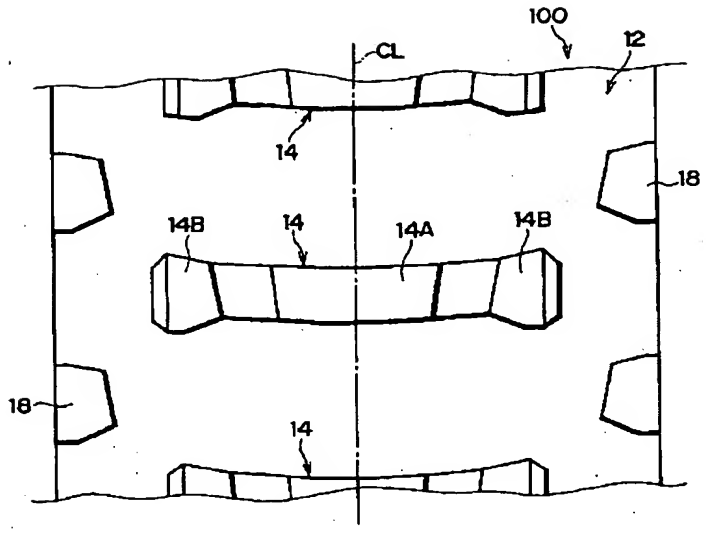
[Drawing 5]



[Drawing 6]



[Drawing 7]



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